

Colour and the Byzantine rainbow*

LIZ JAMES

Colour is the 'dark continent' of Byzantine art history, the most neglected element of art. In 1931, Ernst Diez wrote: 'a coming generation of art-historians may be puzzled to understand the paradoxical prejudice still latent in our time, which treats colour as not the most significant quality of a coloured work of art, but as an accident that can be overlooked in scientific research work'.¹ A similar comment would still be valid today. Colour is barely, if at all, recognised as an aspect of artistic style; it rarely features in stylistic analysis. Its significance within a picture is ignored — analyses of Byzantine colour iconography and symbolism are few and far between. We have not even begun to ask whether colour is a meaningful aspect of Byzantine art.

Where colour is dealt with in art historical terms, it is quantified and listed — there are, it seems, 57 different colours used at Nea Moni, 33 in the apse mosaic of Hagia Sophia, Istanbul, and 177 at Hagia Sophia, Kiev.² Colour is described in terms of pigment type, usually in the broadest possible way (glass, brick, azurite etc),³ and it may be assessed in terms of its hue for sym-

* I would like to thank the 'Byzantinists at the Warburg' for their support, and Jill Storer for her help with syntax and the Church Fathers. My deepest debt, however, is to Robin Cormack for his ever-present advice, encouragement and criticism. I would also like to acknowledge the support given to Byzantine art history over many years by the Barber Institute and Professor Hamish Miles.

1. E. Diez in Diez and O. Demus, *Byzantine mosaics in Greece* (Harvard 1931) preface, vii-viii.

2. D. Mouriki, *The mosaics of Nea Moni on Chios* (Athens 1985); C. Mango and E.J.W. Hawkins, 'The apse mosaics of St Sophia at Istanbul', *DOP* 19 (1965) 113-52; V.N. Lazarev, *Mosaiki Sofii Kievskoj* (Moscow 1966) 144-151.

3. See, for example, C. Mango and E.J.W. Hawkins, 'The Hermitage of St Neophytus and its wall-paintings', *DOP* 20 (1966) 119-206. It should be noted that Ernest Hawkins believes that fresco descriptions of colour should be made through the use of pigment names. The accessibility of medieval pigment descriptions makes this an obvious solution.

bolic and iconographic significance.⁴

Inherent in such an approach are several methodological flaws. Two different accounts of the imperial panel above the narthex door of Hagia Sophia, Istanbul, describe its colours by means of colour charts. In one of these charts there are 53 colours;⁵ in the other, 34.⁶ Neither account identifies the colours of the chart with the actual colours in the mosaic, and this renders it difficult for the outside observer to relate particular colours to particular colour words in each account. Such imprecision means that it is impossible to compare the two accounts with each other or with the description of the colours of any other mosaic. Each colour 'chart' is only relevant for the particular publication it relates to; 'stylistic comparisons' are an impossibility.⁷ To compound the problem, illustrations of works of art still, despite Diez, tend to be in black and white.

This issue of 'colour co-ordination' could be overcome: a single consistent frame of reference could be established through the use of a basic colour chart, such as that designed by Munsell, and used in archaeology. Problems are posed by charts of this nature inasmuch as the colour chips employed do not convey differences in the quality of colours, nor the way in which hues change according to context, but they nevertheless provide a basic form of standardisation.⁸

More significantly, in terms of theoretical shortfalls, this quantitative approach to colour is based on the assumption that the Byzantine way of perceiving colour was essentially the same as

4. Mouriki (as in n.2), does this throughout her iconographic analysis of the mosaics of Nea Moni.

5. T. Whittemore, *The mosaics of St Sophia at Istanbul* vol. 1 (Oxford 1933) 24 and Table IV).

6. E. Hawkins, 'Further observations on the narthex mosaic in St Sophia at Istanbul', *DOP* 22 (1968) 153-4.

7. This is not to say that such a study is totally worthless. Indeed, Mouriki's survey of the colours at Nea Moni and her brief analysis of colour in the 'Style' section of this book are extremely valuable.

8. For Munsell, see A. Munsell, *A grammar of color* (New York 1900). Recent technological developments mean that it is now possible to record colour in three dimensions simultaneously through the use of a Chroma Meter, thereby avoiding the problems posed by one dimensional colour charts such as Munsell's.

our own. Thus it is acceptable to describe the colours of a mosaic by listing the different shades that we see because, so it is assumed, this is the aspect of colour regarded as significant by the Byzantines. However, what I intend to do in this article is to illustrate how such a belief in the primacy of hue is misleading, and significantly restricts our interpretation of Byzantine art.

Colour is characterised by three significant components.⁹ Hue is the position of colour on a chromatic scale (the answer to the question 'what colour is it?' being a term such as red or green); saturation refers to the relative purity or impurity of the colour (the answer to the question being a term such as 'deep red' or 'green-blue'); and brightness describes its relative lightness or darkness (the answer here might be 'dark red' or 'bright green'). Our twentieth century, European perception of colour is immediately apparent: we find it easier to talk about colour in terms of its hue rather than with reference to any other of the qualities. Our understanding of colour in Byzantium is controlled by our own perception of colour — we choose to describe colours in terms of lists of definable hues and to understand colour symbolism and iconography through hue.

However, this need not have been the case in Byzantium. It certainly does not seem to have been so in the Classical world, for here scholars have gradually realised that descriptions of colours in Greek and Roman literature emphasise brightness and saturation rather than hue, that the colours used in art are bold and saturated, and that colour vocabulary demonstrates a flexibility in hue terms, but a more fixed frame of reference for the brightness or darkness of colours.¹⁰

To explore the issue of potential difference in perception, I propose to discuss a representation familiar to all Byzantinists, whether or not art historians, and to the Byzantines themselves. Through a study of the rainbow, it is possible to compare our

9. This is the definition used by physicists, psychologists, physiologists alike. See for example, R.M. Evans, *An introduction to color* (New York 1948); J.J. Gibson, *The senses considered as perceptual systems* (London 1968); R. Arnheim, *Art and visual perception* (New ed., California 1974).

10. See particularly E. Irwin, *Color terms in Greek poetry* (Toronto 1974).

own perceptions with what we can apprehend of Byzantine perceptions, and to examine some of the problems inherent in our understanding of the nature and role of colour in Byzantium.

We see the rainbow through the eyes of Sir Isaac Newton. In physical terms we are told that it is caused by the division of white light into the colours of the spectrum, and we are taught that these are seven very specific hues: red, orange, yellow, green, blue, indigo and violet.¹¹ These seven hues are accepted as the absolute colours of the rainbow, and dominate our descriptions of it. Rainbow motifs are very popular in our culture, ranging from pale pastel versions on greetings cards to bolder plastic window stickers. The object is defined as a rainbow by its hues, by the incorporation of versions of the Newtonian seven at any level of brightness or saturation. Its form can be irrelevant: boot laces and cards with multi-coloured bands ending in pale hearts are defined alike as portraying rainbows because of the multiplicity of hues involved.¹²

We also use the rainbow in a symbolic way. It appears for instance as a hippy manifestation — 'Everybody is a rainbow. You are a rainbow, man (sic)'¹³ where the rainbow is a vague nebulous miasma, or a universal sign of peace, unity and environmental concern, apparently derived from the concept of unity in diversity.¹⁴ But the rainbows we use in this way are almost always in the form of bands of different hues, reiterating again our primary focus. We recognise a rainbow by its hues and its resemblance to the 'real' rainbow.

11. See eg. L. Berg, *Rainbows* (London 1986); E. & L. Kincaid, *Benji's Rainbow Book* (London 1978). It is less generally appreciated that the rainbow is conceived thus because Newton had a particular fancy for indigo and wanted to relate the seven hues to the seven harmonies of the musical scale. See Sir I. Newton, *Opticks* (1704), I, part 2, prop. III, prob. i, expt. 7; II, pt. 3, prop. XVI; III, pt. 1, Q14.

12. This can be seen in the work of T. Klika. His rainbows are essentially pastel hue bands wrapped round a variety of unlikely objects. See T. Klika, *10,000 rainbows* (New York 1983).

13. T. Klika, *op. cit.*, 3.

14. As with the logo of organisations such as Greenpeace. D.H. Lawrence uses the rainbow in the book of the same title as a sign of hope.

Byzantine representations of the rainbow also fall into two similar categories, which I shall define as naturalistic and non-naturalistic.¹⁵ Naturalistic rainbows are those which, by our definitions, display the expected rainbow colours, in bands of two, usually three, and occasionally four hues. These colours may be red and green, as is the case with the Covenant of Noah shown in the Vienna Genesis (f3v);¹⁶ red, green and gold, as in the same scene from an Octateuch from the Topkapı Library (Plate 1),¹⁷ where the gold band also serves to delineate the rainbow from the green background; red, gold and silver at San Marco in the flood mosaic;¹⁸ red, yellow, green and dark blue in a seventh century icon from Sinai showing Christ enthroned as the Ancient of Days and Incarnate Logos;¹⁹ and green, red, white and blue-purple in the *Maiestas Domini* apse mosaic of Hosios David, Thessaloniki (Plate 2).²⁰ Several naturalistic rainbows (San Marco and Hosios David of the examples cited here) show each main colour passing through modulations of shade.

Non-naturalistic rainbows are those which are represented by a single or double band of one basic colour appearing in an arc shape. They may be red, as is the case in the twelfth century Christ in Glory fresco at Lagoudera, an Ascension fresco from St.

15. Though, unavoidably, both these terms are loaded towards our perceptions of how a rainbow should be. I have not in this study included so-called 'rainbow patterns', where apparent rainbow hues are used in an abstract pattern, as in the border of the Pantocrator mosaic at Daphni. This is because it is our hue-orientated perception that relates these patterns to the rainbow, and I am not certain that such an association would apply in Byzantium.

16. Cod. purpur. vindob. Graec. 31.

17. Topkapı Sarayı Lib. Ms. G.I.8., cl150. I am grateful to John Lowden for allowing me to use and copy his picture of this.

18. Other rainbows are found in the Noah Convent scenes at the Cappella Palatina and Monreale, both naturalistic. That at Monreale appears non-naturalistic when seen close-up, but naturalistic from a distance, a clever use of optical effects. However, I have not included these, and mention San Marco only, because of the debate as to how much of the decoration of these monuments owes to the East and how much to the West.

19. Icon B16 in K. Weitzmann, *The monastery of St Catherine at Mt Sinai. The Icons*. Vol. 1 (Princeton 1976) 41-2 and pl. XVIII.

20. For the story of the discovery of this mosaic and an account of its interpretations, see J. Snyder, 'The meaning of the "*Maiestas Domini*" in Hosios David', *B* 37 (1967) 143-52.

Nicholas Kasnitze, Kastoria, and in the Last Judgement at the Kariye Camii (fourteenth century) (Plate 3). The Ascension mosaic at San Marco has red and gold bands and at the Karanlık Kilise, Göreme, (c1050) the Ascension fresco rainbow begins with a black border, then a yellow-orange band and then a dark band (Plate 4). From this a 'dog-toothing' pattern goes out into the bottom band which is white, perhaps representative of silver. There is a similar rainbow at Christ's feet.

Blue may also be used. In the Khludov Psalter, the rainbow is portrayed as bands of blue in both Christ in Glory and Ascension scenes, similar in nature to the representations of emanations of light in the Transfiguration scenes of the same manuscript.²¹ Where the mandorla is blue or silver, as is the case in most of these examples, the rainbow is marked off from it by darker — blue or black — borders and consequently appears brighter. A Georgian enamel plaque from the eleventh century Khakhuli triptych, representing Christ in judgement seated on the rainbow, pictures the rainbow as alternating bands of dark and light blue, divided by gold,²² and the rainbow in the thirteenth century Last Judgement from the church of the Ascension, Mileševo, is also blue (Plate 5).

Variations on the theme of blue include a blue-grey rainbow in the Ascension fresco from the eleventh century church of St Sophia, Ohrid, and silver-grey representations in the Ascension mosaic from Hagia Sophia, Thessaloniki, and at Peć, in the Ascension from the Church of the Holy Apostles (Plate 6).

So, in our terms, the colours of non-naturalistic rainbows are either red, or blue, with the addition of gold and silver, and omitting entirely the colours in the green area of the spectrum. These single or double bands of colour are very different from our modern multi-hued representations of rainbows, which in their emphasis on 'rainbow colours' attempt to echo the naturalistic.

21. Moscow, Ms. 129D. eg the Ascension with David as its prophet, f22 on Psalm 23; the Ascension scenes of ff46 (Ps. 46) and 55 (Ps. 56). F14 (Ps. 17) shows an Ascension in which the divine light is shown similarly.

22. No. 56 in *Medieval cloisonné enamels at the Georgian State Museum of Fine Arts* (1984) 52. This enamel is believed at the moment to be genuine.

The question then arises as to why there are two very different Byzantine portrayals of the rainbow, one of which is, to modern perceptions, stylised and schematised to such an extent as hardly to represent a rainbow at all.

In pictorial terms, the Byzantine rainbow appears to have two separate functions: in Noah scenes as the sign of God's Covenant, and in Christ in Glory scenes. In the former, rainbows are invariably naturalistic; in the latter, they tend to be non-naturalistic.

Textual sources provide further information of Byzantine perceptions of the rainbow. Accounts such as that in the *Suida* lexicon²³ and in Michael Psellos' *De Omnifaria Doctrina*²⁴ describe it as a three-coloured phenomenon, made up of φοῖνιξ πράσινος and ἄλουργός according to Psellos, and μελανίζος χλωρός and πυρρός in the *Suida*. These terms all translate as roughly the same bands of colours: φοῖνιξ and πυρρός describe colours fitting our definition of 'red'; πράσινος and χλωρός are both 'greens'; and ἄλουργός, or, as Psellos glosses it, ὑποπορφύρεος, together with μελανίζος, 'dark-coloured', belong to the same colour band. The rainbow colours of the *Suida* and Psellos are essentially red, green and purple-black, to use the conventional translations. However, studies of Classical Greek colour words reveal the instability of these translations when attempts are made to link them with modern hue terms. Instead, colours can be seen as part of a linear colour scale running from bright to dark, in which colours are graded according to their relation to either end of the scale.²⁵ Consequently, an equally valid translation is to abandon the modern, anachronistic concern with hue, and to focus instead on brightness and saturation. The colours translate then as being bright, less bright and dark — and the problem lies in the imprecision of the English language in dealing with these concepts.

23. *Suida Lexicon*. Ed. A. Adler (Leipzig 1928-38) 666.

24. Ch. 106. PG 122, 749C-752A.

25. Plato details such a colour scale in *Timaeus* 68, A-D. This is echoed in the *Suida* Lexicon (as in n.23) 709-10.

The Byzantine accounts of both the *Suida* and Psellos about the rainbow follow closely that of Aristotle. Aristotle said that the rainbow was green (πράσινος), red (φοῖνιξ), and purple (άλουργός), the three colours that no mixing can create.²⁶ These colours are justified as primaries on mystical, philosophical, arithmetical and experimental grounds.²⁷ Yellow (ξανθός) is secondary to these and lies between purple and green. It is caused by the contrast of colours, not through reflection, and Aristotle is less than clear as to what part it plays. Other colours can appear through the mixing and juxtaposition of the basic three.

Aristotle also writes lengthily about how and why the rainbow appears in the sky. This phenomenon is produced by a reflection of the sun's rays which takes place under certain conditions of cloud formation, and is a sign of varying weather conditions, notably rain. The colours are due to the weakening of our sight by reflection, which takes place in three stages. In the first, the bright light of the sun reflected in the dark medium of water appears red; continued weakening of the sight produces other colours.²⁸

Later philosophers expanded on Aristotle's account, and gave a range of colours for the rainbow, covering the bands of purple, yellow, green, blue and red.²⁹ There are, however, never more than four or five bands of colour in the rainbow. In some cases, the terms given appear to duplicate themselves. This is less a case of 'either/or' than of two terms which seem to have the same hue connotations, but convey differing aspects of brightness.

26. *Meteorologica* 372A, 7.

27. *De Sensu* 439b 21-440 6; *Meteorologica* 375a 4-20; *De Caelo et Mundo*, 268a 7-23.

28. *Meteorologica* 374b-375b.

29. Poseidonios describes the rainbow as having the same colours as those proposed by Aristotle, with the addition of blue (κυάνεος). Cited in Diogenes Laertius, *Vitae*, VII, 152. Aetius' range of rainbow colours consists of purple (πορφύρεος and άλουργός), red (φοῖνιξ), green (χλωρός), and yellow (ξανθός). See Aetius, *Compendium*, detailed in K. Reinhardt, *Poseidonios* (Munich 1921), 165 n.2 and O. Gilbert, *Die Meteorologischen Theorien des Griechischen Altertums* (Leipzig 1907) 604-18. Stobaeus also has a section on the rainbow. He gives red (φοῖνιξ), purple (άλουργός or πορφύρεος), blue (κυάνεος) and green (πράσινος) as the colours of the rainbow. Ἐκλόγια ἀποφθέγματα ὑπόθεσις ed. C. Wachsmuth (Berlin 1884), XXX.VI, 238-42.

The rainbow does not feature strongly in Stoic and Neoplatonic philosophy, although Alexander of Aphrodisias followed Aristotle in describing the colours as red (φοῖνιξ), purple (άλουργός), green (πράσινος) and yellow (ξανθός).³⁰ His contribution was of major importance in establishing Aristotle's three colours as the orthodox view in the Late Antique and early Byzantine period. Philoponos and Olympiodoros both appear to defend the Aristotelian version of how the rainbow is made, and Olympiodoros notes it as having three colours.³¹ Ptolemy on the other hand, may have believed in seven colours, but if this is so, his account belongs to the lost first book of the *Optics*.³²

It is this Classical tradition which Byzantine accounts reflect. These include the entries under ἵρις in the lexica of Hesychius of Alexandria³³ and Photios,³⁴ the Syriac text of Job of Edessa,³⁵ the *Suida* lexicon and the works of Psellos:³⁶ Aristotle acts perhaps as the Byzantine equivalent to Newton in these contexts. Both the art works and descriptions cited take red, blue, purple, yellow and green as the central hue bands, other colours being variations of these (or being varying levels of brightness). The descriptions cited tend to come in works aiming to describe and explain physical phenomena. It is from this tradition that

30. *In Meteorologica* 139, 33-5. Elsewhere in this work (157, 25-29), άλουργός is dropped.

31. For Alexander, see his *De Anima*, tr. & commentary A.P. Fotinis (Washington 1979). Olympiodoros lists the same colours as Alexander, with the exception of ξανθός. See H. Durbeck, *Zur Charakteristik der Griechischen Farbenbezeichnungen* (Bonn 1977) 45.

32. Suggested in A. Lejeune, *Euclide et Ptolémée, deux stades de l'optique géométriques grecque* (Univ. de Louvain, recueil des travaux d'histoire et de la philologie, 3e série, 31 1948), 27-8 & n.5.

33. Hesychius of Alexandria, *Lexicon*, ed. K. Latte (Hauniae 1953), vol. 374.

34. Photios, *Lexicon*, ed. R. Porson (Leipzig 1828) 98.

35. Job of Edessa, *Book of Treasures*. Syriac text ed. & tr. A. Mingana (Cambridge 1935). Job was a Nestorian writing in Syriac who left an account of natural science as taught in Baghdad around 817. Arab sources make it clear that he was a key figure in the translation of Greek authors, especially Aristotle and Galen, into Syriac. In describing the colours of the rainbow, he says that it is made up of three colours: date-red, green and saffron yellow. This last is formed from a mixture of red and white; green is made from a mixture of heat and humidity; red by heat and watery cold.

36. Apart from *De Omnifaria Doctrina*, Ch. 8: περὶ ἱρίδος, PG 122, 796A contains a brief account.

naturalistic rainbow depictions in art and text must stem. Although non-naturalistic rainbow colours are incorporated into these accounts, all textual references emphasise the multi-coloured nature of the rainbow. Instead, it is necessary to turn to the Biblical sources and commentaries for accounts of the non-naturalistic rainbow represented in art.

In the Bible, the rainbow is mentioned in four places. In *Genesis*, it is an essential expression of the Covenant of God with Noah after the Flood.³⁷ It appears in the Vision of Ezekiel, where the prophet, seeing the Lord in Glory, declares: 'Like the appearance of the bow that is in the cloud on the day of rain, so was the appearance of the brightness round about. This was the appearance of the glory of the Lord'.³⁸ This aspect of glory is echoed in *Revelation* where in his vision of heaven, the visionary sees One seated on the throne round which was a rainbow that looked like an emerald (σμαράγδινος),³⁹ and later, a mighty angel wrapped in a cloud with a face like the sun, legs like fire and a rainbow over his head.⁴⁰ The rainbow also appears in *Ecclesiasticus (Wisdom of Sirach)*: 'Look upon the rainbow and praise him that made it; exceeding beautiful is the brightness thereof. It compounds the heavens round about with a circle of glory'.⁴¹ It is also used as part of the description of one of the heroes of the book: 'As the rainbow giving light in clouds of glory'.⁴²

These accounts share a common theme. The perception of the rainbow is as a manifestation of light and a sign of divine glory, especially that seen through visions. Little interest is shown in a multiplicity of hues. That the rainbow is multicoloured is regarded as worthy of mention; what these colours are is not. The nearest colour description is the comparison in *Revelation* of the rainbow to a precious stone, but there is nothing to suggest that

37. *Genesis* IX, 13.

38. *Ezekiel* I, 28.

39. *Revelation* IV, 3.

40. *Revelation* X, 1.

41. *Ecclesiasticus* XLIII, 11-12.

42. *Ecclesiasticus* L, 7.

hue, rather than other qualities of a precious stone, such as its brilliance, is being referred to here. Emphasis instead is placed on the brightness of the rainbow and its relation to light and brilliance, and it is linked explicitly with fire and the sun.

Scenes with rainbows depicted in Byzantine art (except perhaps Noah scenes) emphasise the glory of God, an aspect made clear in all the Biblical examples. They are joined in the use of the rainbow by artistic representations of the Ascension, which are the most common source of rainbows. In one sense, this is surprising since the rainbow is not mentioned in the New Testament account. However, the words of the two angels to the Apostles at the Ascension: 'This same Jesus . . . will come in the same way as you saw him go into heaven',⁴³ make it clear that the Ascension can be related to the return of Christ in majesty and judgement at the Second Coming. Consequently, the Ascension could be depicted in the same way as the Second Coming, using the imagery of *Revelation* and of Old Testament prophecies, including the rainbow.⁴⁴ Ascension homilies place much emphasis on the Ascension as a festival of light:⁴⁵ the rainbow is merely one aspect of this.

Biblical exegeses that mention the rainbow tend to reiterate this image of brilliance. Commenting on *Genesis*, Procopios of Gaza writes about the creation of the rainbow without mentioning its colours, concentrating firmly on its aspect as a sign and discussing whether or not it existed prior to the Flood.⁴⁶ However, the fifth century bishop of Cyrrhus, Theodoret, commenting on *Ezekiel*, does describe the rainbow as light in a circle like a bow, and notes that it is seen by day in the clouds. The brief nod in

43. *Acts* I, 10.

44. At Bawit, for example, the Glory in the apse could be either an Ascension or a Christ in Glory scene. I am grateful to Jill Storer for this reference.

45. See for example the Ascension homilies of Gregory of Nyssa PG 46, 689; John of Damascus PG 96, 843 and Leo the Philosopher PG 107, 113.

46. Procopios of Gaza, *Commentary on Genesis* v13, PG 87,300. John Chrysostom notes it only as the perpetual bond of God's promise. *Homily on Ch. IX of Genesis* XXVIII, PG 53, 254. Other commentaries on *Genesis* mention it within this context or ignore it.

the direction of observation is followed by a disquisition on the theological significance of the rainbow.⁴⁷

Commentaries on the Apocalypse approach the rainbow similarly. Oecumenius (6th century) notes a difference between the perceptible rainbow of many colours and the σμαράγδειος (?emerald-like)⁴⁸ spiritual rainbow. The former is formed as a physical phenomenon through the reflection of light from the clouds; the latter exists as a sign of virtue around the throne of God, a point which serves as a launching pad for a disquisition about the virtues of the stone σμάραγδος.⁴⁹ Elsewhere, he uses the multi-coloured rainbow as a symbol of the multifarious virtues of the angels.⁵⁰ In both accounts, however, he stresses the close relationship between the rainbow and light. Andreas of Caesarea (6th century) writes that the rainbow is emerald-like and appears many-coloured (ποίκιλος) and brightly coloured (ἄνθος) to the wonder of the ranks of angels. He links the rainbow with the sun and light and brilliance.⁵¹ Arethas of Caesarea (9th century) in his *Commentary* says that the Apocalyptic rainbow is like the rainbow in the clouds made from the shining rays of the sun. Both of these rainbows are described as multicoloured (ποίκιλος). That round the throne of God signifies the goodness of God, 'the being like the sun': those that achieve good works will similarly be made shining.⁵² In the section of the commen-

47. Theodoret, *Commentary on Ezekiel*, PG 81, 836C. Gregory of Nazianzus in his *Commentary on Ezekiel*, PG 36, 665B, writes that the rainbow indicates peace and the covenant between God and man.

48. σμάραγδος is usually translated as 'emerald'. However, LSJ suggest that this is probably incorrect and that the term is used of several green stones. The whole issue of the words and colours used for stones is a complex one, affected as it is by our emphasis on the colour of the stone and the probable lack of such emphasis originally.

49. Oecumenius, *The complete commentary of Oecumenius on the Apocalypse*, ed. H.C. Hoskier, University of Michigan Studies, Humanistic Series v.23 (Ann Arbor 1928), 69-70. I am grateful to Jill Storer for this reference.

50. Oecumenius (as in n.49), 120-121.

51. Andreas of Caesarea, *Sermon X*, 4. PG 106, 253B-C. ἡ δὲ ἵρις, σμαραγδίζουσα, τὸ ποίκιλον καὶ ἀνθοῦν ἐν ἀρεταῖς τῶν ἀγγελικῶν ἐμφαίνει τάξεων 253C.

52. This rainbow is πράσινος green in colour, rather than ἵασπις, which is the colour of the stone interpreted as jasper. Arethas, PG 106, 568D. Oecumenius explains the different significance of these two stones. For the translation of these terms, see above, n.48.

tary dealing with *Revelation X*, 1, Arethas concentrates on the effects of the glory and unapproachability of light.⁵³

Of these writers on scripture, Arethas is the only one who seriously engages with classical theories on the formation of the rainbow. As his classical learning is well-known, this may be a deliberate choice on his part. It may be that other commentators believed either that this Classical aspect was irrelevant in direct relation to scripture, or that such details were unnecessary in an account of the rainbow. What was important in this context was not the rainbow's hue and how it was made, but its qualities of light and what these signified. In all these passages, it is light that is emphasised, with or without reference to the rainbow, paralleling the pictorial representation of these scenes of divine glory, which may or may not contain a rainbow.

In Scriptural terms therefore, the rainbow is something other than the physical phenomenon described elsewhere. Oecumenius touches on the difference; Philo explains it in some detail. In discussing *Genesis IX*, 13-17,⁵⁴ he mentions the placing of the rainbow. He says that the rainbow of *Genesis* is not the earthly rainbow but the 'bow of God', something very different. The earthly rainbow does not have a special separate nature but is an appearance of the sun's rays in moist clouds, a phenomenon which does not happen at night or when the sun is not out. The bow, on the other hand, is a symbol of the invisible power of God, which is in the air and affects the density of the air and rain.⁵⁵ Arethas of Caesarea supports this. He says that the divine, single-coloured rainbow is called by the same name as the human, multicoloured one to remind humanity of the disunity

53. PG 106, 636C-D.

54. In *Questions and Answers on Genesis*, Book II, 64. What survives of this section has been translated as a LCL text, 1953.

55. A scholiast on Hesiod described the rainbow as 'Ἱρις δὲ ὁ προφορικὸς λόγος ἀπὸ τοῦ εἶρω τὸ λέγω', the rainbow which is the spoken word, which comes from the verb εἶρω, which is "to speak". Scholia Hesiod Theog. v.266 in J. von Arnim, *Stoicorum veterum fragmenta* II, 43, 30 (fr. 137): I am grateful to Michael Carey for this reference. Philo uses Προφορικὸς λόγος and also ἐνδιάθετος λόγος to mean uttered speech. How far this comparison can be taken is unclear: the idea of the rainbow as a manifestation of speech does not seem to appear in Byzantium, but the concept of colour as speech most definitely does.

of many coming together in unity in the imitation of God.⁵⁶

This theme is represented in a letter of St Basil on the difference between the substance and the person.⁵⁷ In this, he uses the colours of the rainbow to illustrate the unity in disunity of the Trinity. He describes the rainbow and its colours in essentially Aristotelian terms, but calls it a 'reflecting brilliancy' (αὐγής). This emphasis on qualities of brightness and gleaming is apparent in his colour words: γλαυκός, usually translated as grey or green, but also meaning gleaming; ἡλεκτρινός, a shiny gold and silver compound; πυραυγής, fiery, but with emphasis on the shimmering effect; and πορφύρεος, purple, but actually a term applied to hues ranging from yellow and green to red and purple.⁵⁸

It is this concept of the 'bow of God' which is portrayed by the non-naturalistic rainbow. In art, the non-naturalistic rainbow appears overwhelmingly in scenes like the Ascension, the Last Judgement and Christ in Glory, where it forms part of the manifestation of the glory of the Lord upon which Christ sits and rests his feet. In these scenes, he usually sits on a rainbow and places his feet on another, often identical one. It has been suggested that these act as a signifier of heaven, based on Isaiah LXVI, 1, 'heaven is my throne and earth my footstool'.⁵⁹ Whilst this may be so for cases where only one rainbow is depicted, the use of the rainbow for both throne and footstool in the majority of cases suggests that this is not so, unless one believes that heaven and earth, this world and the next, would be represented by the same sign. The rainbow is not proposed as a sign of heaven in any exegetical text that I have seen. Rather, in all of these scenes, the rainbow is not a manifestation of physical phenomenon, nor a part of the Old Testament covenant between God and men,

56. Arethas, *Commentary on the Apocalypse*, PG 106, 568D.

57. Basil, *Letter* 38, PG 32, 333C-335C.

58. πορφύρεος is generally taken as being the colour of the dye obtained from the murex, and thus as purple. In fact, murex dye varies enormously in hue, and it seems feasible that the hue connotations of πορφύρεος are equally varied.

59. This is proposed by Weitzmann in his description of the Sinai icon mentioned above n.13, where there is one naturalistic rainbow, upon which Christ sits, and a non-naturalistic one under his feet.

nor even a schematic reference to these things, but a manifestation of divine light reflecting the glory of Christ and seen particularly in holy visions, a further indication of the unworldly nature of these rainbows.

Clues about the nature of the non-naturalistic rainbow are provided in the meteorological accounts by their emphasis on the character of the rainbow as being both light and made by light. This theme of the rainbow as light is made very clear in the theological writings cited above. So instead of being defined simply in hue terms, an additional quality, that of light, or brightness, is perceived as significant.

Byzantine writing about colour and the Byzantine use of colour words demonstrates a belief in colour as a form of light — as indeed Newton makes clear. But this is not a belief in white light divisible into component spectral colours, but a perception of a fundamental element of colour being its light-bearing quality. This is apparent in descriptions of works of art with their emphasis on aspects such as the glowing or shiny nature of colours, rather than the hue, in the nature of Classical and Byzantine Greek colour vocabulary, where each word can cover a range of hues but a particular light aspect, and in the Byzantine concept of a colour scale running from bright/light to dark.⁶⁰

Beyond this, the relation of light to divinity is made clear by Pseudo-Dionysius. In the *Divine Names*, light is listed as one of the names given to God and as an image of good.⁶¹ The *Celestial Hierarchy* talks of God as the source of light: 'material lights are images of the outpouring of an immaterial gift of light'.⁶² Thus colours, visible manifestations of light, are appropriate for representing God Incarnate and it is hardly surprising that the

60. Apparent for example in Pseudo-Dionysius, *Celestial Hierarchy* XV, 1. PG 3, 336C; John Chrysostom, *Ad Theodorum lapsus* I, 11, PG 47, 292; John of Damascus, *De Fide Orthodoxa* I, 4, PG 94, 797B-800C.

61. *Divine Names*, PG 3, 697C. Tr. and commentary, C. Luibheid, *Pseudo-Dionysius — the complete works* (London 1987) 74.

62. *Celestial Hierarchy* I, 3. PG 3, 121D. Καὶ τῆς αὐλον φωτοδοσίας εἰκόνα τὰ ὕλικά φῶτα. See also I, 1. 121A. *Complete works*, 146. E. Benz, 'Die Farbe in der christlichen Vision', *Erano Yearbook* 41 (1972) 265-323, looks at colour visions as a reflection of divine magnificence, though his emphasis is predominantly Western.

rainbow which is seen by scriptural and exegetical texts as one of the visible indicators of glory and divine light, should be employed in scenes expressing these concepts. Expositions on the Transfiguration make very similar points about divine light.⁶³

So these depictions of the rainbow represent a planned iconographic expression of divine light and glory, with deliberately chosen consistent colours. If rainbows are seen as symbols of divine glory and light, then the colours used to depict them should underline this meaning.

A single band rainbow is almost invariably red. It is possible to see red as a colour indicative of light, not necessarily that of pure divinity in the sense in which white is used,⁶⁴ but light in the sense that Pseudo-Dionysius uses it. It is the sign of fire — ‘the red [Apocalyptic horse] is the power and sweep of fire’⁶⁵ — and the ‘word of God seems to honour the depiction of fire above all others’. Fire and light are seen to be related concepts. The *Suida*’s entry under ἵρις makes this point. In art, red is the colour of the angel shepherding the sheep in the scene representing the parable of the sheep and the goats at San Apollinare Nuovo in Ravenna. In the Mausoleum of Galla Placidia, it forms the heart of the stars on the blue ceiling; and in the Paris Psalter, red is the colour of the heavens from which God’s hand emerges in the scene depicting the prayer of Isaiah.⁶⁷ Red is also significant of other aspects such as life and blood, which may, depending on context, be further qualities reflected.⁶⁸ Red is the one

63. Gregory Nazianzus, *Oratio* 40, 6, PG 36, 363-66; John of Damascus, *Oratio De Transfig.*, PG 96, 545-576, are among various of the Fathers commenting in this way. See J.A. McGuckin, *The transfiguration of Christ in scripture and tradition* (New York 1986).

64. In writings of the Transfiguration, for example, (see above, n.60) or as Pseudo-Dionysius uses it eg. in *Celestial Hierarchy* 15, 8, PG 3, 337A, where whiteness is ‘the gleam of . . . kinship with the light of God’.

65. CH 15, 8. PG 3, 337B.

66. CH 15, 2. PG 3, 328C.

67. Paris Gr. 139, f435 v.

68. Pliny, *Natural History* XXX, 98-9, says that red is significant in this way. This aspect of red seems to be a general cultural referent. See eg. M. Sahlins, ‘Colors and cultures’, in J.L. Dolgin, D.S. Kemmitzer, D.M. Schneider, eds., *Symbolic anthropology. A Reader in the Study of Symbols and Meanings* (New York 1977) 165-180.

colour consistent in every literary description of the rainbow where colour is used, and in all naturalistic depictions of rainbows.

Non-naturalistic rainbows which are not red are predominantly blue and grey/silver. This also suits the concept of the rainbow as light, for blue, next to gold, is the colour of divine light.⁶⁹ John of Gaza described a painting of the universe in a bath house in Gaza. This had at its centre a gold cross set against three concentric circles of blue: he called these circles an image (τύπος) of the Trinity and the heavenly sphere.⁷⁰ Christ's mandorla in the Transfiguration is generally in shades of blue and silver, as is the case at Daphni, or blue as in the manuscript associated with John Cantacuzenos.⁷² The mandorla represents the immaterial light of divine visions and the presence of the divinity. In early Christian art, its use is restricted to the Transfiguration and to the miraculous appearance of God in the Old Testament.⁷² The similarities in colour and context of rainbow and mandorla underline their association in meaning. But at San Apollinare Nuovo, in the scene of the parable of the division of the sheep and the goats referred to above, blue is used for the angel shepherding the goats, a negative use of the colour. Context here defines significance.

Gold (probably represented in some cases by yellow) is another means of representing divine light. Gold is the most precious metal, the paradigm of purity. It is employed as a sign of light and divinity by St Basil and Pseudo-Dionysius.⁷³ According to Pliny it was highly valued because of its purity, because it does not rust, decompose or wear, and because it can be beaten to

69. See P. Reuterswärd, 'What colour is divine light?', in T.B. Hess, J. Ashbery, eds., *Light, from Aten to Laser* (Art News Journal XXXV, 1969) 108-27; J. Gage, 'Colour in history: relative and absolute', *Art History* 1 (1978) 110-111. Gage's important article provides a starting point for medieval colour perception studies.

70. John of Gaza, *Ekphrasis* τοῦ κοσμικοῦ πίνακος I, 41-44. Text in *Johannes von Gaza und Paulus Silentarius* ed. P. Friedländer (Leipzig, 1912), 137-38.

71. Paris, Gr. 1242, f92v.

72. On these themes, see eg. A. Grabar, 'The Virgin in a mandorla of light', in ed. K. Weitzmann, *Studies in honour of A.M. Friend* (Princeton 1955) 305-311.

73. *Celestial Hierarchy* II, 3, PG 3, 141B. See A. Stojakovic, 'Jésu-Christ, source de la lumière dans la peinture byzantine', *CahCM* 18 (1975) 271, & n.9.

the fineness of air.⁷⁴ Consequently, gold can be used to invoke the transcendental nature of the Incarnate Christ.

When light and dark are taken as the essential points of reference, then different hues can be used to make the same iconographic point. Colour in Byzantium is based upon the conception of colour as made up of elements of light and dark: its symbolic meaning must also be related to this belief.

The concept of an organised colour (hue) symbolism seems not to have been of great importance in Byzantium. It does not feature in the type of text where it might be expected, such as descriptions of precious stones either as stones or in their use in Biblical descriptions, notably the Heavenly Jerusalem of the New Testament.⁷⁵ Nor do texts on the rainbow pay much attention to symbolism. It is virtually impossible to obtain a consistent medieval eastern or western colour symbolism or iconography based on hue.⁷⁶ Blue, for example, can be used to represent divine light (Christ's mandorla at the Transfiguration at Daphni, for example) or a more negative aspect (the angel with the goats at San Apollinare Nuovo). Instead of a fixed colour iconography, several different hues are used to depict the same aspect: red and blue both 'represent' the rainbow.

But the selection of colours is not random and motiveless. All those colours used in the rainbow convey the same idea or association. Because colour is conceived less as hue and rather more as reflections of light and darkness on a black-white scale, then its relation to this scale provides its hue. However, meaning is provided not by the position on this colour scale alone, but by context. Blue in the rainbow can only mean divine light because of the known significance of the rainbow; in the scene of the angels and the sheep and the goats at San Apollinare Nuovo, the significance of the colour is altered from the usual simple association with divinity to an almost negative divinity, in the person of the angel with the goats. In the Transfiguration scenes at St.

74. *Natural History* XXXIII, 1, 60.

75. Michael Psellos' *De Lapidibus*, PG 122, 888-900 deals with the first two concepts; Epiphanius of Cyprus, *De XII Gemmis Liber*, PG 43, 293B-304D with the last.

76. As Gage, (as in n.69) 107, explains.

Catherine's, Sinai, and Daphni, blue is closely linked with black, and through this with divinity: the negative theology of Pseudo-Dionysius describes the divine darkness of the unapproachable light of God.⁷⁷ The reds of the visionary rainbow on the one hand, and of Eve's garments in the Anastasis scene on the other, express different associations. In the former case, red is associated with fire and light, and in the latter with blood and life.⁷⁸ Purple is both a sign of royalty and of sinful luxury. Nicholas Mesarites in his account of the Pantocrator mosaic in the Church of the Holy Apostles in Constantinople, describes how Christ's robe is coloured blue and red 'warning all by the hand of the painter not to wear brilliant clothing or to seek purple'.⁷⁹ On the other hand, wool is common and available to all: 'however, when it is dipped in the dye of the sea [murex], it is called purple. Once it takes up this name, it becomes something which is fitting to be used exclusively by kings . . . [the purple] transcends the common character because of the dignity of him who uses it'.⁸⁰ Hue in itself has no fixed significance: it is not the defining element of Byzantine colour symbolism.⁸¹

But to assume that colour is therefore meaningless is to assume that a constituent part of an image has no meaning. Colour in Byzantium is a crucial element in giving an image meaning: 'who the emperor is, and who the enemy, you do not know exactly until the true colours have been applied, making the image clear and distinct',⁸² for 'as long as somebody traces the outline as in a drawing, there remains a sort of shadow; but when he paints

77. *Epistle I*, PG 3, 1065A; *Epistle V*, PG 3, 1073A.

78. See above, n.65, for red as significant of blood and life, which links in with the concept of Eve as 'the mother of all living' (*Genesis* 3, 20).

79. Mesarites, 'Description of the Church of the Holy Apostles in Constantinople', text, with translation and commentary by G. Downey, *TAPS N.S.* 47, 6 (1957): Ch. XIV, 8, p.870.

80. Sixth session of the Seventh Ecumenical Council, citing Athanasius' *Letter to Eupychius*, Mansi 317E-320D, pp.138-9, in D.J. Sahas, *Icon and Logos. Sources in eighth century Iconoclasm* (Toronto 1986).

81. For additional supporting evidence for the 'context is all' argument see L. Brubaker, 'Byzantine art in the ninth century: theory, practice, and culture', *BMGS*, 13 (1989) 58-60.

82. John Chrysostom, *In dictum Pauli, nolo vos ignorare* 4, PG 51, 247D.

over it brilliant tints and lays on colours then an image appears'.⁸³

The distinction is simple: colours, as hues, have no fixed 'meaning', their significance depends on their context; colour, on the other hand, gives meaning, for it is only by being coloured that an image represents the archetype. In trying to establish symbolism or iconography based on hue, art historians are dealing in an irrelevancy in Byzantine colour perception.

Desire for fixed order, for a scheme into which everything fits neatly, is a legacy of nineteenth century scholarship and the 'scientific' cast of mind, in which nothing is valid unless defined and categorised. But Byzantium is a society in which multiple references and associations are keenly appreciated, and limitations of category avoided. The Byzantines knew, for example, that the Devil is recorded both as an angel of light and 'the great serpent'. Possession by demons was essentially random: entirely innocent people could be possessed, not through moral failings but through a lack of caution. Demons could take any form; evil was recognisable through its deeds.⁸⁴ As for good, 'the Son of Man is coming at an unexpected hour' in an unknown form.⁸⁵ If good and evil were so random in appearance, how could the colours used to represent them be any more settled?

In the same way, the rainbow is both light and colour; the hue, as far as this is analysed in Byzantium, is seen as a product of reflection, and less important than the aspect of light. That no one set of colour terms or uniform system of representation exists is not surprising. The rainbow is not perceived in such uniform hue terms in Byzantium, but in terms of glory and brilliance. 'The beauty of the carving is extraordinary, and wonderful in the appearance of the cavities which, overlaid with gold, produces the effect of a rainbow, more colourful than the one in the clouds'.⁸⁶

83. John Chrysostom, *Epistle ad Hebraeos*, Homily XVII, 2, PG 63, 130A.

84. See C. Mango, 'The Devil', in *Bulletin of British Byzantine Studies* 13 (1987) 47; J.B. Russell, *Satan. The early Christian tradition* (Cornell U.P. 1981).

85. *Luke* 12, 40.

86. Nikolaos Mesarites, 'Account of the usurpation of John Comnenus "the Fat"', ed. A. Heisenberg, *Die Palastrevolution des Johannes Comnenus* (Würzburg 1907) 44, tr. in C. Mango, *Art of the Byzantine Empire* (Toronto 1986) 229, the description of the palace of the Mouchroutas.

So there is no overwhelming consensus as to the specific colours of the rainbow, though the hues associated with it do all fit into the same basic chroma bands. For the naturalistic rainbow, Aristotle's three bands, red, green and purple, are echoed in a variety of vocabulary by most of the sources. The *Suida*'s suggest an alternative reading in terms of brightness, a reading which suits the three bands as well, if not better, than one based on hue. Most texts, both secular and religious, are content to call the rainbow 'many-coloured' and expand on the nature of its formation from light. Where the rainbow is represented in a non-naturalistic way, the colours employed are significant of light and divinity. However, it is clear that context — in this case the rainbow as a sign of divine glory — is more important than the hue in defining the meaning. The three major rainbow colours are linked with the elements, by *Suida* for example, and on a religious allegorical level, the significance in both pagan and Christian terms of the number three is well-known.

Where do they exist, accounts of the rainbow concentrate on aspects that are, to us, unexpected. The rainbow as a sign of God's covenant, according to *Genesis*, is virtually ignored in surviving exegeses: its colours are put to little use; and it is not considered a portent — perhaps indicating how firm a grip this particular natural explanation held — or an omen. It tends to act almost exclusively as a minor natural phenomenon and a sign of glory. More important than colour is light, in both art and literature.

Modern emphases on the rainbow lie with the representation of its hues: Byzantine accounts and depictions appear incomplete, a demonstration of perceptual and artistic failure on this level. To regard these as schematic is the result of our own hue-based perceptions. Instead, it is necessary to accept a fundamental difference in Byzantine perceptions of colour, and a fundamental difference with regard to the use of colour in art. What I have begun to do here is to stress the perception of colour as *the* defining and formative element for the Byzantines in art, perhaps the single most important aspect of art, and consequently to emphasise the importance of issues such as colour symbolism and iconography in defining the nature of that art. In emphasising

the significance of brilliance, a further new dimension to Byzantine art is opened up in both stylistic and interpretive context. Where Byzantium is often conceived as a static world, instead, its handling of colour suggests unexplored subtlety.

*Barber Institute of Fine Arts,
University of Birmingham*



Plate 1



Plate 2



Plate 3



Plate 4



Plate 5



Plate 6

Plate 1: The covenant of Noah, Topkapı Sarayı Library, Ms.G.I.8, fol. c1150. (Photo: John Lowden).

Plate 2: Detail, apse mosaic, Hosios David, Thessaloniki. ?Fifth century.

Plate 3: Last Judgement. Parekklesion, conch of the bema, Kariye Camii, Istanbul. Early fourteenth century.

Plate 4: Ascension. Chapel 23, Karanlık Kilise, Göreme. c1050.

Plate 5: Christ in Majesty, Last Judgement. East wall of the old narthex, Church of the Ascension, Mileševo, Yugoslavia. Thirteenth century.

Plate 6: Ascension. Cupola, Hagia Sophia, Ohrid. Eleventh century.

Unless otherwise stated, all photos are the author's.

